

# Exhibit 7

Belews, Assessment of Dam Safety Excerpt  
December 8, 2009

# Assessment of Dam Safety Coal Combustion Surface Impoundments (Task 3) Final Report

Duke Energy Corporation

Belews Creek  
Steam Station

Walnut Cove, North Carolina



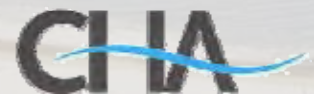
Prepared for

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December 8, 2009

CHA Project No. 20085.1090.1510



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I acknowledge that the management unit referenced herein:

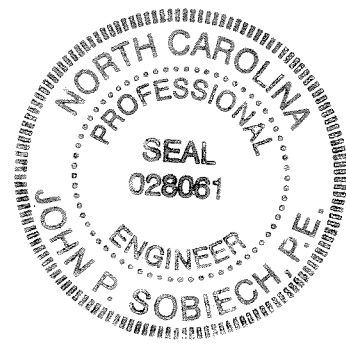
- Ash Basin

Has been assessed on September 8, 2009 and September 9, 2009.

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## APPENDIX

Appendix A - Completed EPA Coal Combustion Dam Inspection Checklists and Coal Combustion Waste (CCW) Impoundment Inspection Forms
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The only other impoundment noted on this site was the main cooling water reservoir, Belews Lake which was previously discussed above. The dam is also the subject of Five-year Independent Consultant Inspections.

#### **1.4 Previously Identified Safety Issues**

Based on our review of the information provided to CHA and as reported by Duke Energy, several concerns have been reported with regards to the level of the phreatic surface and the stability of the downstream slope since the dam was constructed. This concern resulted in the completion of field investigations, slope stability analysis and remedial construction activities on several occasions. The following paragraphs briefly summarize these activities:

- December 13, 1978: Stability analysis by Law Engineering and Testing Company for the downstream slope of the Ash Dike under steady state conditions with the pond elevation at Elev. 760 feet (full pond) and Elev. 745 feet (current conditions). The analysis indicated factors of safety of 1.31 and 1.34 respectfully.
- May through July 1982: subsurface investigation completed through the embankment including the completion of soil test borings, undisturbed sampling, sampling of under drain materials, and soil laboratory testing. The testing program consisted of grain size analysis, Atterberg Limits, and triaxial compression testing with pore pressure measurements.
- October 31, 1983: Law Engineering and Testing Company Report reviewing the proposed horizontal drain installations intended to effect the lowering of the phreatic line of the Ash Dam.
- March 19, 1984: Additional analysis completed by Duke Energy considering slope stability and the proposed horizontal drain installation. Stability analyses were run under the steady state seepage condition using new soil strength parameters. Safety factors ranged from 1.37 to 1.46 depending on reservoir elevation and the variation in soil

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parameters used. The horizontal drain design is developed and is partially shown on Figure 5.

- Horizontal drains were installed along the downstream berms at the Elev. 720 and 670 levels as shown on Duke Drawing BC-1037-03. This construction took place in about 1986 according to the Seventh Five-year Independent Consultant Inspection dated February 2009. These drains were also reported to have been cleaned out in 2004.
- Slope stability calculations completed by Duke Energy in July 1988 resulted in factors of safety ranging from 1.28 to 1.6 depending upon the cross section evaluated, the pond elevation (Elev. 752 to 760) and whether pore pressure was considered in the analysis. The lower factors of safety were noted to be at Station 10+00 at the highest point of the embankment.
- The February 2009 Five-year Independent Consultant Inspection documented rising water surface levels at several points in the embankment. Recommendations are made for further evaluation.
- Wet surface soils on the downstream face have been replaced with rip rap at several locations including between Station 6+75 and 8+00. Photos 20 and 24 are representative of these repairs.
- The outlet structure was relocated as previously noted due to environmental concerns within Belews Lake.
- Rip rap placed on upstream slope for wave protection in 1993.

## 1.5 Site Geology

Based on a review of available surficial and bedrock geology maps, and reports by others, the Belews Creek Steam Station is located in the Milton Geologic Belt of the Piedmont Physiographic Province in North Carolina. The Milton Belt consists of a complex of plutonic and metamorphic rocks. Rock types in the area of the site include gneisses and schists of Paleozoic to Precambrian age, Paleozoic intrusive rocks and younger Mesozoic-age sedimentary

